

Science Flight Report

Operation IceBridge Antarctica 2010



Flight: F01
Mission: Sea Ice 03

Flight Report Summary

Aircraft	DC-8 (N817NA)
Flight Number	110106
Flight Request	118003
Date	Tuesday, October 26, 2010 (Z), Day of Year 299
Purpose of Flight	Mission Sea Ice 03
Take off time	12:03:47 Zulu from Punta Arenas (SCCI)
Landing time	00:23:30 Zulu at Punta Arenas (SCCI)
Flight Hours	12.4
Aircraft Status	Airworthy. Failure of all four fuel flow indicators during flight.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	<ul style="list-style-type: none"> • Low-altitude survey (1,500 ft AGL) of two sea ice transects in the Weddell Sea. Accomplished entire mission as planned. • ATM, snow and Ku-band radars, gravimeter, LVIS, POS/AV, and DMS were operated on the survey lines. • MCoRDS was not in operation on this flight due to the sea ice mission. Instrument team used time on the aircraft during the flight to work on the system. • Conducted calibration maneuvers over open water for LVIS between the South Shetland Islands and the northern Peninsula on the way to the survey area and over the Strait of Magellan on the return transit to Punta Arenas. • Conducted calibration at different flight elevations for MCoRDS system near waypoint 201 during descent. • Conducted a ramp pass at 1,800 ft AGL at Punta Arenas airport for ATM and LVIS instrument calibration at end of mission. DMS could not use the ramp pass because of darkness.
Geographic Keywords	Weddell Sea, Antarctica, Cape Norvegia, Brunt Ice Shelf, Drake Passage
ICESat Tracks	None.
Repeat Mission	Yes (2009).

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	92 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	None
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	350 GB	Issues with data aq. sys.
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	350 GB	Issues with data aq. sys.
LVIS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	100 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	121 GB	Camera swap.
POS/AV (510 + 610)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2 GB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	80 MB	None
DC-8 Onboard Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	40 MB	None

Mission Report (Michael Studinger, Mission Scientist)

After 5 days on the ground in Punta Arenas we are finally taking off for our first science flight. Today's mission is an exact repeat of the IceBridge flight on October 24, 2009. Its main purpose is to measure gradients in sea ice freeboard and thickness along the "gate" connecting the tip of the Antarctic Peninsula with Cape Norvegia. This gate is the line across which ice export is typically computed, and the export from this area is a major contributor to total ice volume exported into the Antarctic Circumpolar Current. The AMPS model showed no clouds in the survey area other than near Cape Norvegia and over the Antarctic Peninsula. We encountered small pockets of low lying clouds, predicted by the forecast we got during the weather brief from the met office. The cloud cover obscured the ice surface causing a loss of return reflections over less than 15% of the total length of the profile.

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM systems worked well and collected good data. About 15% of the line was obscured by low-level clouds and ice fog. ATM collected a total of 92 GB of data, not including digital photographs.

MCoRDS: The MCoRDS system was not operated on this flight due to the sea ice mission, but the instrument team used the flight for testing, configuring and calibrating the system.

Snow and Ku-band radar: The snow and Ku-band radars collected data along the entire line. An issue with the data acquisition system resulted in a short data gap of 30 minutes for the snow radar and about 30-45 minutes for the Ku-band radar between waypoints 202 and 201 on the southern transect.

Gravimeter: Worked well. No apparent issues.

DMS: DMS worked well with minor issues. The camera had to be replaced with the spare system during flight. Frosting needed to be cleared at the beginning of the line following the descent to survey altitude. Occasional clouds obscured the surface.

LVIS: LVIS system worked very well on all lines and collected data during low-altitude segments in profiling mode. All three receivers worked well. LVIS recorded good calibration data over water.

POS/AV: Systems worked well. No issues.

DC-8 on board data: System worked well.

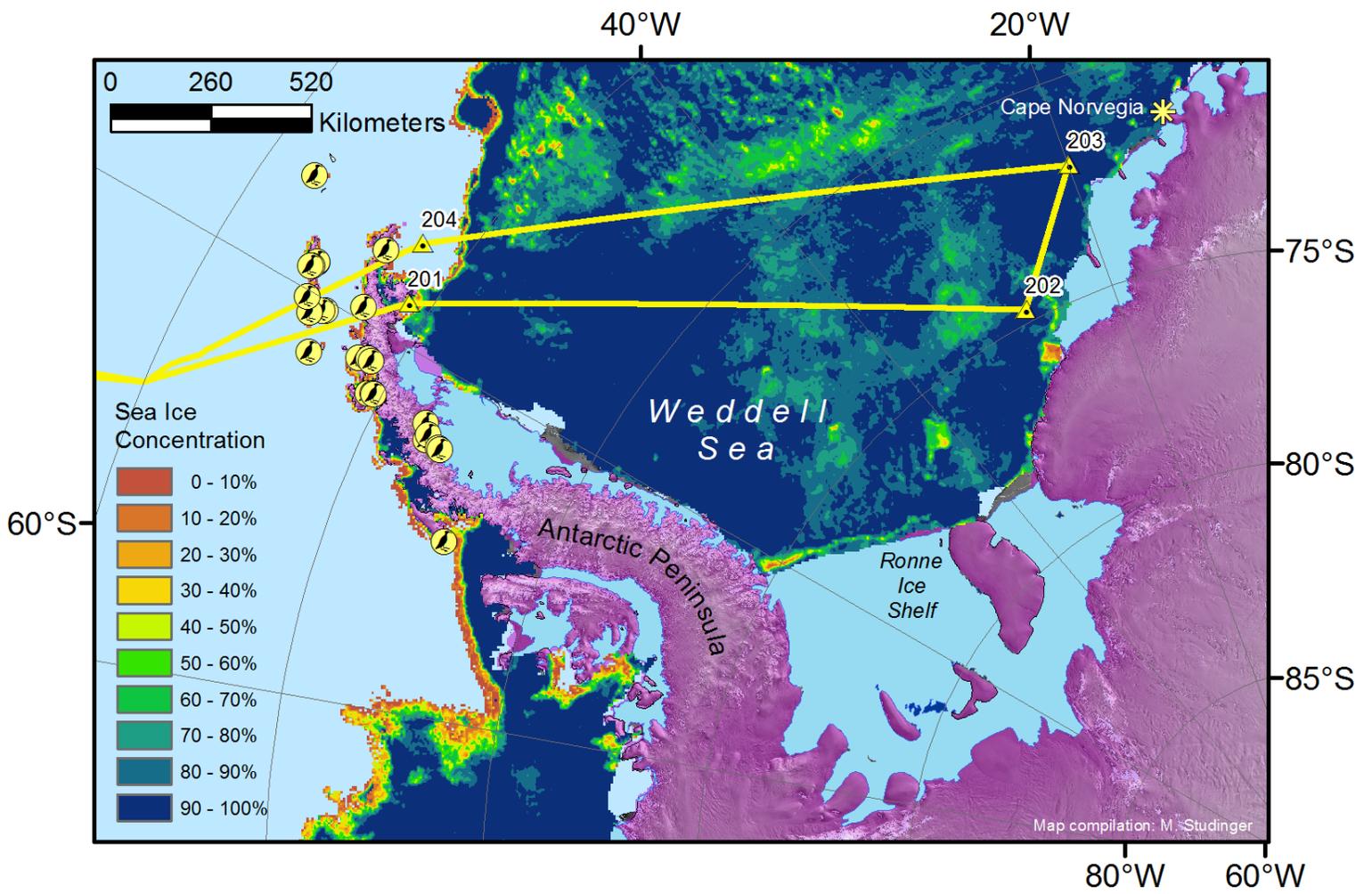


Figure 1: Flight of sea ice mission 03 plotted over sea ice concentration from AMSR-E data (Oct 26, 2010).